

SCIENTIFIC RESULTS OF EXPLORATIONS BY THE U. S. FISH COMMISSION STEAMER ALBATROSS.

[Published by permission of Hon. Marshall McDonald, Commissioner of Fisheries.]

NO. III.—REPORT ON THE BATRACHIANS AND REPTILES COLLECTED IN 1887-'88.

BY

E. D. COPE.

The contents of the following list are arranged in accordance with the localities visited by the *Albatross*, and in the order in which they were reached in a voyage from Washington to San Francisco via Cape Horn.

I. WEST INDIES.

1. *Bufo aqua* DAUD.

Santa Lucia.

2. *Anolis alligator* D. and B.

Santa Lucia.

3. *Liophis ornatus* GARMAN.

Dromicus ornatus GARMAN, Proceeds. Amer. Philos. Society, 1887, p. 251.

Santa Lucia, No. 15084.

This species is clearly a *Liophis*, and it resembles no other species of the genus. The scuta of the only specimen are 195, 1-1, 88. The color differs a good deal from the type as described by Garman, in the dark color of the sides. This is not clearly distinguished as a band, and it is interrupted by light vertical spots of irregular outlines.

4. *Bothrops caribbæus* GARMAN.

Trigonocephalus caribbæus GARMAN, Proceeds. Amer. Philosoph. Proc., 1887, p. 285.

Santa Lucia, Nos. 15082-3.

This species is nearly allied to the *B. atrox*, but differs very much in the coloration.

II. EAST COAST OF BRAZIL.

5. *Taraguira torquata* WIED.

Abrolhos Islands, Nos. 15107-19.

III. ARGENTINE CONFEDERATION.

6. *Nannophryne variegata* GÜNTHER.

Two specimens, 15123-4, from Mayne Harbor, Patagonia. Prof. L. A. Lee.

The genus *Nannophryne* differs from *Bufo* in the entire absence of the *cavum tympani* and Eustachian tubes. It is identical with *Ollotis* Cope, and the name proposed by Günther must be retained as it was published in 1873, while *Ollotis* was not proposed until 1875. *Nannophryne* (*Ollotis*) *caerulescens* Cope is from the Cordilleras of Costa Rica.

In the *Zachænus roseus*, described below, the auditory organs, though present, are minute. From the same region two other genera with imperfect auditory organs are known, *Alsodes* Bell and *Eusophus* Cope (= *Cacotus* Gthr.). I have already called attention to the tendency to this peculiarity among the Salientia which inhabit mountainous regions.* *Cophæus*, *Batrachophrynus* and *Telmatobius* are from the Peruvian Andes, and *Crepidophryne*, *Cranophryne*, and *Nannophryne* from the Cordilleras of Central America.

7. *Zachænus roseus* sp. nov. Cystignathidarum.

Head and body rather short; hind legs elongate. Width of head entering length of head and body, two and a half times, and equal the length of the head measured on the side to the middle of the tympanic drum. Heel of extended hind leg reaching a point between the orbit and the nostril. Head depressed, muzzle but little prominent in profile; nostril but little nearer end of muzzle than to eye. Tympanic disk a vertical oval, not defined below, but, if completed, measuring less than half eye-fissure. Interorbital space flat, wider than eye-fissure. Tongue a longitudinal oval, but little free, and slightly notched posteriorly. Vomerine teeth in two fascicles near each other, and just posterior to the line connecting the posterior borders of the internal nares. Internal nares minute.

Skin smooth above and below; the abdominal integument forming a disk, the anterior fold of which extends from axilla to axilla. A narrow glandular fold from the posterior part of the eyelid to just above the axilla. Digits with slight tubercles below, and the inferior surfaces of their extremities thickened. First finger shorter than second. Toes rather short, with indistinct dermal borders. An internal, but no external solar tubercle. No tarsal tubercle; the thin inner edge turned upwards.

Color, pale rose gray above, dirty white below. A black band extends from the end of the muzzle along the canthus rostralis, and follows the glandular fold to its end above the axilla. A branch descends, and, crossing the tympanic drum, stops a short distance in front of the shoulder. Limbs with very indistinct dusky cross-bars. Tarsus dusky below. Two large brown spots on the front side of the fore-arm. Two similar spots on the proximal half of the front of the tibia.

Length of head and body, 23^{mm}; of head to posterior edge of tympanum (axial), 7.5^{mm}; width at canthus oris, 9^{mm}; of fore leg, 14^{mm}; of fore foot, 6^{mm}; of hind leg from vent, 37^{mm}; of hind foot, 15.5^{mm}; of tarsus, 8^{mm}; of tibia, 11.5^{mm}.

* Batrachia and Reptilia of Costa Rica: Journal Academy Philada., VII, p. 95.

One specimen, No. 15126, from Port Otway, Patagonia. Dr. L. A. Lee.

This species is the second of the genus *Zachænus*, the typical one being the *Z. parvulus* Girard from near Rio Janeiro. The *Z. roseus* is of less robust form than the *Z. parvulus*, has no dermal folds on the back, and the prefrontal bones are widely separated, and the vomerine teeth are not in arched series. *Zachænus* has a simple cartilaginous sternum, and the terminal phalanges are simple. These characters, with the complete frontoparietal bones, place it in the group *Ceratophrydes*, where it forms the approach to the group *Hylodes*.

8. *Batrachyla leptopus* BELL., Zoology of the Voyage of the Beagle, III, p. 43, pl. 18, fig. 5. *Hylodes leptopus* BOULENGER, Catal., Batr.-Sal. Brit. Mus., 1882, p. 219. No. 15125.

The genus *Batrachyla* may be now correctly defined for the first time. It enters the group *Hylodes* of the family *Cystignathidæ*. That is, it has the external metatarsals united, the terminal phalange with a transverse terminal branch, and the sternum a simple cartilaginous plate. A frontoparietal fontanelle, vomerine teeth, and Eustachian tube. Toes free.

This genus in its cranial fontanelle approaches nearer to *Malachylodes* Cope (founded on a Mexican species) than to any other genus of *Cystignathidæ*. It differs from this form in the presence of vomerine teeth. In its membranous cranial roof it possesses a character of inferiority, as all the Batrachian forms of Patagonia do in some respect or other, as compared with their allies elsewhere.

9. *Leptodactylus ocellatus*.

Buenos Ayres, Nos. 14889-94.

10. *Hydromedusa tectifera* COPE.

Buenos Ayres, No. 15189.

IV. CHILI.

11. *Paludicola frenata* sp. nov.

Well developed inguinal glands. No tarsal tubercle; metatarsal tubercles two, both of conic form, the internal the larger. Toes free, like the fingers without dermal lateral ridge or wing. Heel of extended hind leg reaching to posterior border of orbit. Skin with a few small low tubercles.

Muzzle obtuse, projecting a little beyond lip-border, narrowed above. Nostril nearer orbit than lip-border. Tympanum hidden. Vomerine teeth in oblique fascicles between nares. Choanæ and ostia pharyngea small. Tongue very slightly emarginate. First finger longer than fourth, and much longer than the second, which consists of the metacarpal only. Third and fifth toes subequal. Skin without definite folds above or below. Posterior face of femur tubercular.

Ground-color gray. A row of six or seven blackish-light-bordered spots on each side of the median line. One of these pairs is between the orbit; one on the interscapular, and one on the sacral regions, and four or five small ones on each side of the urostyle. Two spots posterior to each orbit, the inferior much the larger, and extending posteriorly to the humerus, and in line anteriorly with a band on the canthus rostralis which extends to the upper lip. A dark triangular spot below the eye. Inguinal gland anteriorly light, posteriorly black. Limbs cross-banded (four bands on tibia); inferior surfaces immaculate.

	M.
Length of head and body.....	.029
Length of head to canthus oris.....	.0075
Length of head to canthus oculi anterior.....	.0035
Width of head at canthus oris.....	.010
Length of fore leg.....	.016
Length of hind leg from vent.....	.040
Length of hind foot.....	.020
Length of tarsus.....	.007

The extreme reduction of the second anterior digit is a remarkable feature of the individual which represents this species. The character appears to be normal, but the first finger on one of the hands is also abbreviated, though to a less degree than the second digit. This is clearly abnormal, since it is unsymmetrical, but it may be an imperfect expression of the tendency so distinctly marked in the second digit.

From Lota, No. 15129.

12. *Liolaemus chilensis* LESSON.

Tomé, No. 15128.

13. *Liolaemus tenuis* BELL.

Lota, No. 15127.

14. *Opheomorphus chamissonis* WIEG.

Coluber chamissonis WEIG. *C. temminckii* SCHLEG.

Dromicus temminckii D. and B.* *Aporophis temminckii* COPE.

The species referred to *Aporophis* m., are generally more slender than the typical forms of *Opheomorphus* m., but they can not be retained in a distinct genus. Lota, 15130.

V. PACIFIC COAST.

15. *Gonatodes albigularis fuscus* HALLOW.

Panama, No. 15132.

16. *Anolis pentaprion* COPE.

Panama, No. 15131.

17. *Pelamis bicolor* DAUD. 15188.

VI. GALAPAGOS ISLANDS.

18. *Phyllodactylus tuberculosus* WIEGM.

Chatham Island, Nos. 14949 and 14956. The first record of the occurrence of this species on the Galapagos.

19. *Phyllodactylus galapagoensis* PETERS.

The single specimen of this species differs from the description given by Peters in the decidedly larger abdominal scales, but it agrees with that of Boulenger in the British Museum Catalogue.

20. *Phyllodactylus leei* sp. nov.

Scales of the superior surfaces of equal size, one-fourth as large as the abdominals, convex. Scales of belly numbering 43 between the transverse lines connecting the axillæ and the groins. Digital pallets wider than digits. Scales of upper surface of fore limbs and feet, and of upper surface of tibia and hind feet, as large as those of the abdomen; those of the feet more or less serrate. No row of scuta on inferior side of tail. Auricular meatus small, but little larger than a digital pallet. Superior labials six to front border of pupil; inferiors larger, $4\frac{1}{2}$ to the same point. Symphyseal large, urceolate, followed by two scuta, behind which the scales become gradually smaller.

Color above brown with a reddish tinge, marked with indistinct darker speckles. Sides of head paler than top, a dark band passing from end of nose through eye, above auricular meatus to near shoulder. Limbs speckled above. Below, cream-color, brownish on throat.

Measurements.

	Mm.
Total length.....	80
Length to vent.....	41
Length to canthus oris.....	7.5
Width to canthus oris.....	7
Length of fore leg.....	11
Length of hind leg.....	16
Length to axilla.....	19

Chatham Island, No. 14957. Dedicated to Prof. Leslie A. Lee, the naturalist of the expedition.

21. *Tropidurus grayi* BELL.

Nos. 14897-924, James Island; 14926-930, Gardner's Island, 14931-40, Indefatigable Island; 15003-13, Albemarle Island; 15014-26, Hood Island.

A variety with a dark lateral band, not very distinct, from Duncan Island, 14941-44. The most abundant reptile of the Archipelago.

22. *Tropidurus lemniscatus* sp. nov.

Scales of regularly graduated size from dorsal to ventral region, those of the sides a little larger than those of the belly and the dorsal a little larger. Dorsal scales in rows which converge posteriorly;

laterals in vertical rows. Fifty rows of ventral scales between lines of axilla and groin. Dorsal crest low, becoming more elevated on the proximal caudal region. Toes of extended hind leg reaching to orbit. A strong fold bordered with a few large scales in front of the humerus and an open pocket in front of it lined with granular scales. Auricular meatus three-quarters the length of the eye, bordered in front by a few acuminate scales. Frontal scales divided longitudinally. Scales of top of muzzle more divided than in *T. grayi*, the six large scales of the latter represented by nine or ten. One row of large and two or three rows of small superciliary scales. Nostril subvertical in direction.

Color dark olive with a light greenish or brownish gray band extending from the orbit to the base of the tail. The dark olive of the back is dark bordered; the light band is more or less brown speckled, and the dark of the sides is more or less light cross-barred, and it is frequently bounded below by a second light longitudinal band. Integument within prehumeral fold black. Top of head and limbs nearly uniform brown; lower surfaces light yellowish.

The females are smaller than the males, and like those of the other Galapagos species differently colored. The longitudinal bands are wanting; the sides are vermilion red, and there is a red half-collar on the inferior half of the neck.

As compared with the *T. grayi*, its nearest relative, this species differs in the large size of the lateral scales, in the subdivision of the scales of the muzzle, and in the coloration. The dorsal crest is lower. The females differ in the distribution of the red. In *T. grayi* the sides of the head are red in the female, and in the *T. pacificus* the entire top of the head is rusty red.

It is worthy of notice that in this genus, differently from *Sceloporus*, it is the females that possess the bright colors instead of the males, and that red takes the place of blue on the throat and sides of the belly.

Measurements of ♂.

	Mm.
Total length.....	190
Length to vent.....	70
Length to axilla.....	30
Length to canthus oris.....	14
Width at canthus oris.....	14
Length of fore limb.....	30
Length of fore foot.....	14
Length of hind leg.....	51
Length of hind foot.....	25

Measurements of ♀.

Total length.....	153
Length to vent.....	58
Length to axilla.....	21
Length to canthus oris.....	10
Width at canthus oris.....	11

From Chatham Island, Nos. 14945 to 14964.

23. *Tropidurus pacificus* STEINDACHNER.

Abingdon Island, 14966 to 15002.

24. *Amblyrhynchus cristatus* BELL.

Abingdon Island, 14965, 15182-4; Duncan Island, 15176, 15179-81; Hood Island, 15177; James Island, 15178, 15187; Gardner's Island, 15185; Chatham Island, 15186.

14 bis. *Opheomorphus chamissonis* WIEGM.

James Island, 15027, 15080.

25. *Testudo nigrita* LESS.

Albemarle Island, 15190-91.

VII. LOWER CALIFORNIA.

18 bis. *Phyllodactyles tuberculosus* WIEGM.26. *Sceloporus zosteromus* COPE.27. *Uta stansburiana* B. and G. 14896.28. *Callisaurus draconoides* DE BL. 14895.29. *Cnemidophorus tessellatus tessellatus* SAY.29. *Cnemidophorus tessellatus tigris* B. and G.30. *Cnemidophorus sexilineatus* LINN.31. *Chilomeniscus cinctus* COPE.

A living specimen of this species from Tucson, Ariz., preserved in the zoological garden of Philadelphia, was observed by my friend A. E. Brown, the superintendent, to possess extraordinary burrowing powers. It penetrated and traversed soil with almost as great rapidity as it moved on the surface of the ground. 15158.

32. *Pityophis vertebralis* DE BL. 15157.33. *Bascanium laterale* HALLOW.

A variety without bands, and of a nearly uniform dark brown color. 15135-6.

34. *Crotalus adamanteus atrox* B. and G. 15134.

VIII. PACIFIC COAST OF NORTH AMERICA.

35. *Xantusia riversiana* COPE.

Several adults in fine condition from San Clemente Island. Nos. 15166-75.

36. *Gerrhonotus multicarinatus principis* B. and G.

British Columbia, No. 15194.